

# R-CRYPTO

## User's Manual

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# I Introduction to R-Crypto

**R-Crypto** is an easy-to-use disk encryption software that protects your confidential information and personal data on a desktop, notebook, or a removable data storage device against unauthorized access.

To protect the data **R-Crypto** creates encrypted virtual disks (virtual data storage devices). These disks provide real time data encryption and decryption which are fully transparent to the user, it means that the data is being encrypted just before it is being written to the disk and is being decrypted right after it is being read from the disk without the need of user intervention. All data (such as file and folder names, and content of all files) stored on such disks is constantly encrypted. The access to data on the virtual encrypted disk is impossible unless the user provides a correct password. At the same time, all file and disk operations for connected virtual encrypted disks are performed the same way as for standard disks.

All data of the encrypted virtual disk is stored together with the disk meta-data in a single file-container. That means that a virtual encrypted disk is actually an ordinary file that can be stored on any data storage device, like a hard drive, USB-disk, CD, DVD, or a network resource, and can be easily transferred to another computer or backed up.

**R-Crypto** encrypts the data on virtual disks using the cryptographic infrastructure of the Microsoft Windows operating system. This infrastructure allows the users to use various installable cryptographic service providers, including those that are already pre-installed. For example, Microsoft AES Cryptographic Provider is one of the pre-installed cryptographic service providers in Windows XP and Vista that implements the modern and most secure encryption algorithm Advanced Encryption Standard (AES) with key length of 128, 192, and 256 bits.

Such approach allows the users to select themselves the cryptographic sub-system that satisfies their requirements. It also reduces limitations on the use of **R-Crypto** in companies that require certification for such products to meet certain governmental or corporate standards.

## 1.1 R-Crypto Features

### Simple and easy-to-use interface:

- R-Crypto Management Panel providing access for the user to all actions of the system;
- Wizard guiding the users through the creation of encrypted disks;
- List of the most frequently connected encrypted disks (can be disabled);
- Configurable list of auto-connected encrypted disks;
- Change the size of the encrypted disk easily;
- Access to encrypted disk control actions outside the R-Crypto Management Panel directly from the Windows shell (for example, connect/disconnect);
- Special icon for connected encrypted disks in the Windows shell (can be disabled);
- Access to most **R-Crypto** actions from the Windows system tray.

### Reliable data protection and encryption:

- Users can use various cryptographic service providers, both pre-installed in the Windows operating system and available from the third parties;
- Disk free space encryption (can be disabled);
- Wizard guiding the users through the disks re-encryption;
- Ability to connect an encrypted disk in the read-only mode;
- Configurable hot keys to disconnect either all connected encrypted disks, or each disk separately;
- Automatic disconnection of all connected encrypted disk upon user's logoff;
- Ability to automatically disconnect the encrypted disks upon screensaver startup, entering the hibernation mode, or computer lockup;
- Ability to automatically disconnect the encrypted disks upon encrypted disk file-container storage media is

removed from the system. **New feature in R-Crypto 1.4!**

- Ability to automatically disconnect the encrypted disks upon exceeding an encrypted disk inactivity period. Inactivity period is a period of time when the connected encrypted disk is not being used, that is it is a period of time when no data is being read from the disk or being written to the disk. **New feature in R-Crypto 1.4!**
- Ability to enforce the disconnection of locked encrypted disks upon automatic disconnection;
- File-containers of the connected encrypted disks are protected against re-writing and deletion;
- Wipe encrypted disks for secure deletion.

### Using over network:

- Ability to create and connect encrypted disks' file-containers located on any accessible network location;
- Connecting an encrypted disk emulating a "local disk" to provide access for remote users (required for Windows XP and later versions);
- Automatic saving and restoring of the encrypted disk network sharing options. **New feature in R-Crypto 1.4!**

### Advanced usage:

- Ability to connect the encrypted disk to an empty NTFS folder (e.g. C:\path-to-empty-NTFS-folder\);
- Support for system disk utilities (check disk, defragmentation, etc.);
- Command-line utility to manage encrypted disks' connections.

## 1.2 System Requirements

### Hardware

- Minimum 10 MB of free disk space to install the program
- Enough disk space for encrypted disks file-containers

### Software

#### Operating system:

- Windows 7 Beta (32 and 64 bit versions) **New in R-Crypto 1.3!**
- Windows Server 2008 (32 and 64 bit versions)
- Windows Vista (32 and 64 bit versions)
- Windows Server 2003
- Windows XP (32 and 64 bit versions)
- Windows 2000

#### Browser:

- Internet Explorer 6.0 or higher

You also need administrative privileges to install **R-Crypto** on your computer.

## 1.3 R-Crypto Limitations

- No limitations on the number of created file-containers for the encrypted disks and the places where they reside. File-containers may be stored on any media supported by your computer, including devices with removable storage and network drives.
- The size of file-containers for encrypted disks is limited only by its own file system and the file system of the storage location where they are to reside. NTFS: no limitations, FAT32: up to 4 GB, FAT16: up to 2 GB.
- The minimum size of the file-container cannot be less than 64 kB.
- The number of simultaneously connected encrypted disks is unlimited if you choose to connect encrypted disks to empty NTFS folders. Still the number of encrypted disks simultaneously connected to separate drive letters cannot exceed the number of drive letters available in your system.

## 1.4 Trial Version Limitations

Please note that you will have **R-Crypto** running in the trial mode until you register it with a valid license key. The trial period lasts for 30 days during which there are no limitations in **R-Crypto** operation. When the trial period expires, **R-Crypto** will still give you access to your data stored on the encrypted disks but with the read-only access. That is, you will be able to read your data on already created encrypted disks, but will not be able to modify them, to store new data on those disks, or create new encrypted disks. As soon as the license key is entered, all limitations will be removed.

If you do not have the license key, you may obtain it by purchasing **R-Crypto**.

## 1.5 Contact Information and Technical Support

To obtain the latest version of **R-Crypto**, go to:

Product Site: <http://www.data-security-software.com>

Sales Department: [sales@r-tt.com](mailto:sales@r-tt.com)

**R-Crypto** Technical Support Team is available 24 hours a day, seven days a week, and has an average response time less than 4 hours.

Tech. Support: [support@r-tt.com](mailto:support@r-tt.com)

Send your support request to: <http://www.r-tt.com/SupportRequest.shtml>

## II R-Crypto Management Panel

You may perform most actions from R-Crypto Management Panel.



You may activate R-Crypto Management Panel:

- By double-clicking the **R-Crypto system tray icon**;
- By right-clicking the **R-Crypto system tray icon** and selecting **R-Crypto Panel** on the shortcut menu;
- From the **Start** menu by clicking **R-Crypto** in the **R-Crypto** menu group.

You may configure **R-Crypto** to automatically activate R-Crypto Management Panel at each computer startup. Select **Run R-Crypto Management Panel at system startup** option on the General tab of the R-Crypto Settings panel.



## III Protecting Your Data Using R-Crypto

To store your confidential data safely and securely using **R-Crypto**, you need:

- **Create an encrypted disk.**

You may create as many encrypted disks as you need and place them anywhere you need. Once the disks are created, you need to place your confidential data on those encrypted disks. To do this:

- **Connect an encrypted disk.**

You may connect as many disks as you need. You may access the connected encrypted disks as they were regular disks in your system. Transfer your confidential data on those disks. Then you are through with the work with your confidential data, you need to prevent access to your confidential data. To do this,

- **Disconnect a connected encrypted disk.**

### 3.1 Create a New Encrypted Disk

To create a new encrypted disk,

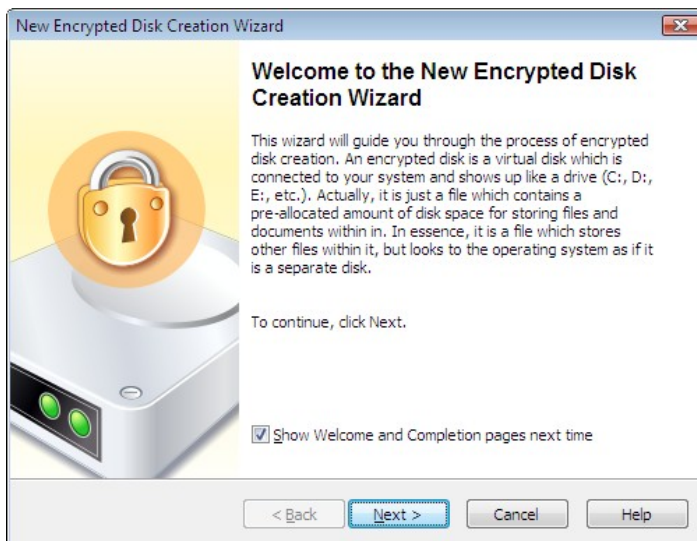
- 1 **Double-click the R-Crypto icon in the system tray to show R-Crypto Management Panel and click Run new encrypted disk creation wizard task on it.**

**Other ways to create an encrypted disk:**

- Right-click the **R-Crypto** icon in the system tray and select **Create New Disk** on the shortcut menu.  
or
- In the Windows Explorer, go a place where are you going to store the file container for the encrypted disk, right-click there, select **New**, and select **R-Crypto file container** on the shortcut menu.

The New Encrypted Disk Creation Wizard will appear.

Welcome to the Encrypted Disk Creation Wizard page



Click the **Next** button to continue.

You may make **R-Crypto** not to show the first and the last pages in the wizards. Clear **Show Welcome and**

**Completion pages next time.** To resume showing these pages, select **Show welcome and completion pages in wizards** on the General tab of the R-Crypto Settings panel.

- 2 **Specify the name and location of a file-container for the new encrypted disk and size of the new encrypted disk on the General Encrypted Disk Information page and click the Next button.**

General Encrypted Disk Information page

**New Encrypted Disk Creation Wizard**

**General Encrypted Disk Information**  
Basic parameters required to create the new encrypted disk.

Specify the name and location of a new disk file-container, which will be created to hold the data of this disk, and specify desired new disk size.

Container name: My First Encrypted Disk

Container location: Documents

Disk size: 520 MB

9% of free space

Note: You have 5,64 GB of free space available for the selected location.

< Back Next > Cancel Help

**General Encrypted Disk Information options:**

- |                    |                                                                                                                                                                      |
|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Container name     | Specify the name of the file-container. That should be only the file name without a drive letter and path.                                                           |
| Container location | Specify the path to the file-container. You may enter the location directly, select a location, or select <Browse> to browse to the required place.                  |
| Disk size          | Specify the size of the new encrypted disk. You may also use the slider to select the size of the new encrypted disk. If needed, you may change the disk size later. |

- 3 **Select the encryption settings for the new encrypted disk on the Encryption Setting page and click the Next button.**

Encryption Settings page

**New Encrypted Disk Creation Wizard**

**Encryption Settings**  
Specify the new disk encryption settings.

Choose one of the predefined encryption options or specify encryption settings manually by clicking Custom button.

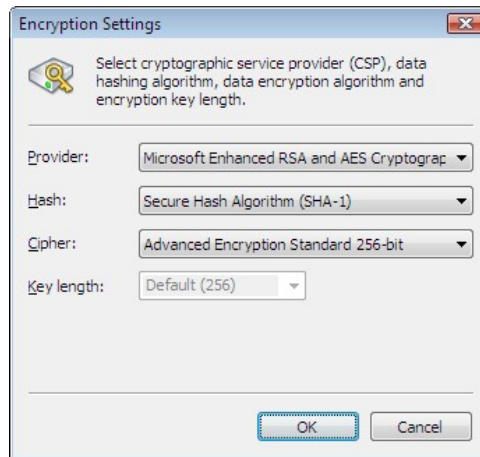
☒ Most secure, good performance  
☐ More secure, best performance  
☐ Best compatible (chosed this option only if you plan to use disk on Windows 2000)  
☐ Custom settings

Selected encryption settings:  
Microsoft Enhanced RSA and AES Cryptographic Provider  
Secure Hash Algorithm (SHA-1) and Advanced Encryption Standard 256-bit

Custom... Default

< Back Next > Cancel Help

You may select the settings either from a predefined set, or select them separately on the Encryption Settings dialog box.



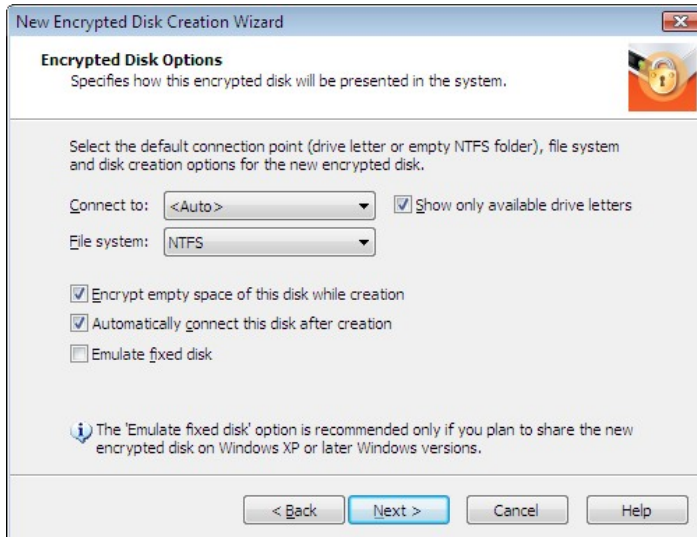
To reach the Encryption Settings dialog box select **Custom settings** or click the **Custom** button.

Click the **Default** button to make the encryption settings as they specified on the the Encryption tab of the R-Crypto Settings panel.

The **Selected encryption settings** field briefly describes the settings you have selected. Please note that you need to select **Best compatible** if you plan to use the new encrypted disk on Windows 2000. You may learn more about the encryption and hash algorithms on the **Cryptographic and Hash Algorithms** topic.

- 4 Select the default connection point (drive letter or empty NTFS folder), file system, creation and default connect options for the new encrypted disk on the Encrypted Disk Options page and click the Next button.

Encrypted Disk Options page



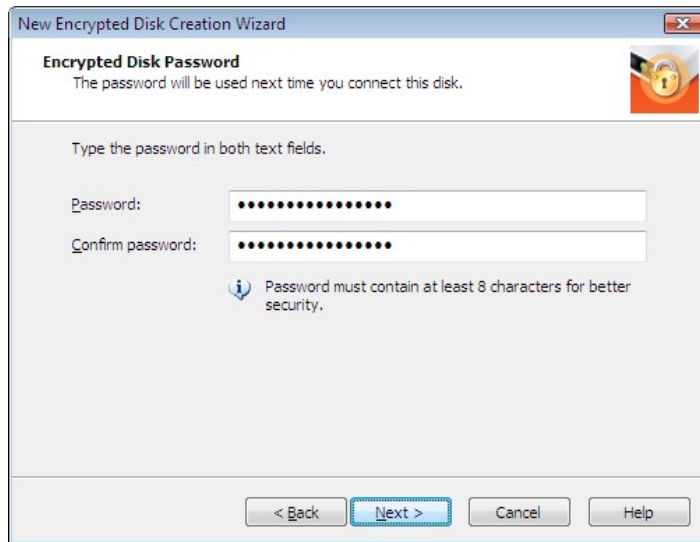
#### Encrypted Disk options:

Connect to	Select the drive letter under which the connected encrypted disk will be visible to your system. Select <Auto> to let <b>R-Crypto</b> select the drive letter itself. You may also select any empty NTFS folder as a disk connection point by clicking <Browse...>. This option can be modified later on the General tab of the encrypted disk Properties panel.
Show only available drive letter	If this check box is selected, let <b>R-Crypto</b> shows only drive letters available for the connection. It is impossible to connect an encrypted disk using the letter that is occupied by another device in the system.
File system	Select a file system for the new encrypted disk. You may also select None to leave the disk unformatted to format it later using standard Windows utilities.
Encrypt empty space of the disk while creation	Select this check box if your want <b>R-Crypto</b> to encrypt the empty space in the disk's file container. This option increases time necessary to create a disk but also increases security as it conceals the size of the encrypted disk's file-container occupied by actual data.
Automatically connect this disk after creation	Select this check box if you want to have this disk automatically connected upon creation.
Emulate fixed disk	Select this checkbox if you want your system see the new disk as a fixed one. This option is only used while connecting the disk and doesn't affect the disk creation process in any way. This option can be modified later on the General tab of the encrypted disk Properties panel.

Select **Emulate fixed disk** only if you plan to share the new disk on Windows XP or later Windows versions.

- 5 Enter the password for the new encrypted disk on the Encrypted Disk Password page and click the Next button.

Encrypted Disk Password page



Go to the **Best Security Practices** topic for more information on how to choose a strong password.

- 6 On the Completing the New Encrypted Disk Creation Wizard page Click the Finish button to complete the creation of the new encrypted disk.

Completing the New Encrypted Disk Creation Wizard page

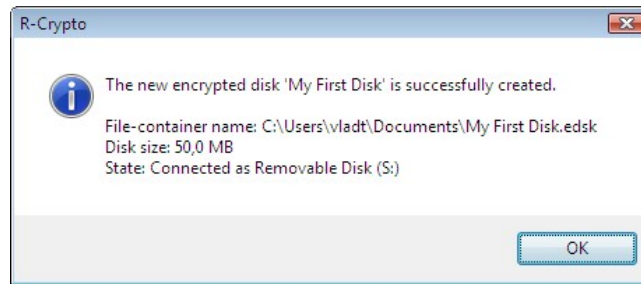


You may make **R-Crypto** not to show the first and the last pages in the wizards. Clear **Show Welcome and Completion pages next time**. To resume showing these pages, select **Show welcome and completion pages in wizards** on the General tab of the R-Crypto Settings panel.

- \* **R-Crypto will start creating the new encrypted disk showing its progress.**

The New encrypted disk... message box will appear when **R-Crypto** finishes creating the new encrypted

disk.



## 3.2 Connect an Encrypted Disk

To connect an encrypted disk,

- 1 Right click the R-Crypto icon in the system tray and select **Connect Disk** on the shortcut menu.

Other ways to connect a disk:

- Click **Connect encrypted disk** or select **Connect** on the shortcut menu of the disk in the Recent Encrypted Disks area of the R-Crypto Management Panel
- or
- Double-click the encrypted disk file-container in the **Windows Explorer**
- or
- Right-click the encrypted disk file-container in the **Windows Explorer** and select **Connect** on the shortcut menu
- or
- Right-click the **R-Crypto** icon in the system tray, select **Recent Disks** on the shortcut menu, then select the required encrypted disk
- or
- Right-click the encrypted disk's file-container in the **Windows Explorer** select **Properties** on the shortcut menu, go to the R-Crypto tab, and click the **Connect** button.

The Connect Encrypted Disk dialog box will appear.

Connect Encrypted Disk dialog box

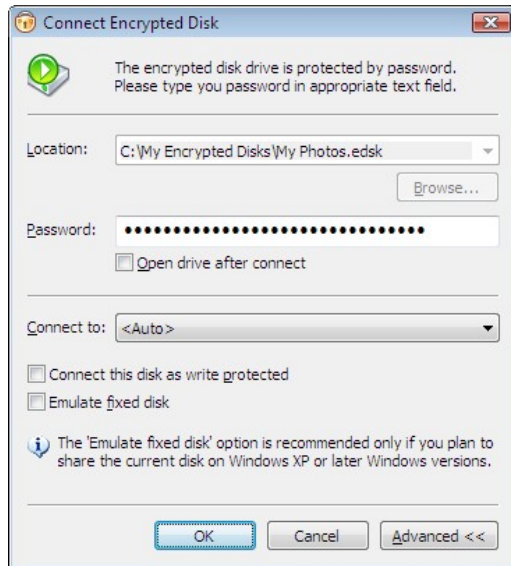


- 2 Select the encrypted disk file-container (if necessary), enter the password, and click the **OK** button.

R-Crypto will use the connection options specified during encrypted disk creation or management. To change these options, click the **Advanced** button and edit them on the Connect Encrypted Disk dialog box. Please

note that these changes will affect only the current connection of the encrypted disk. To learn how to make permanent changes in encrypted disk options, go to the **Managing Encrypted Disks** chapter for details.

Connect Encrypted Disk dialog box



### Connect Encrypted Disk options:

Location	Shows the location of the file-container of the encrypted disk.
Password	Enter the password for this encrypted disk.
Open drive after connect	Select this check box to make <b>R-Crypto</b> immediately open the disk in Windows Explorer after connection.
Advanced Options:	Use advanced options to override the default connect options specified on the General tab of the encrypted disk Properties panel.
Connect to	Select the drive letter under which the connected encrypted disk will be visible to your system. Select <Auto> to let <b>R-Crypto</b> select the drive letter itself. Note that <b>R-Crypto</b> shows only drive letters currently available for the connection. It is impossible to connect an encrypted disk using the letter that is occupied by another device in the system. Instead of selecting a drive letter you may also select any empty NTFS folder as a disk connection point by clicking <Browse...>.
Connect the disk as write protected	Select this check box if you want to connect the encrypted disk as a read-only device. You will be able to read data from the disk but not to write anything to it.
Emulate fixed disk	Select this checkbox if you want that your system sees the disk as a fixed one. Use this option only if you plan to share this disk on Windows XP or later Windows versions.

### \* **R-Crypto will connect the selected encrypted disk and it will appear in My Computer.**

If the **Show notifications in system tray** option is selected on the General tab of the R-Crypto Settings panel, R-Crypto will show the "The encrypted disk <DiskName> is successfully connected as Removable Disk (<DiskLetter>:)." message in the balloon ToolTip appearing at the **R-Crypto** icon in the system tray. If the **Emulate fixed disk** option is selected, R-Crypto will show it as "Local Disk (<DiskLetter>:)" in this message.



You may access your data on this encrypted disk as it was on a conventional disk in your system.

### 3.3 Disconnect a Connected Encrypted Disk

To disconnect a connected encrypted disk,

- Right-click the R-Crypto icon in the system tray, select **Disconnect** on the shortcut menu, then select the required connected encrypted disk in the list.

**Other ways to disconnect a connected encrypted disk:**

- Click the connected encrypted disk on R-Crypto Management Panel and select **Disconnect** on the shortcut menu
- or
- Right-click the connected encrypted disk or the corresponding file-container in the **Windows Explorer** and select **Disconnect Disk** on the shortcut menu
- or
- Right-click the connected encrypted disk or the corresponding file-container in the **Windows Explorer**, select **Properties** on the shortcut menu, go to the R-Crypto tab, and click the **Disconnect** button
- or
- Press the shortcut keys specified on the Disconnect tab of the encrypted disk properties panel.

- \* **R-Crypto will disconnect the selected encrypted disk and it will disappear in My Computer.**

If the **Show notifications in system tray** option is selected on the General tab of the R-Crypto Settings panel, **R-Crypto** will show the "The encrypted disk <DiskName> is successfully disconnected." message in the balloon ToolTip appearing at the **R-Crypto** icon in the system tray.

To disconnect all connected encrypted disks,

- Right-click the R-Crypto icon in the system tray, and select **Disconnect All Disks** on the shortcut menu.

**Other ways to disconnect all connected encrypted disks:**

- Click **Disconnect all connected encrypted disks** or **Disconnect All Disks** on R-Crypto Management Panel
- or
- Press the shortcut keys specified on the Disconnect tab of the R-Crypto Settings panel.

- \* **R-Crypto will disconnect all connected encrypted disks and they will disappear in My Computer.**

If the **Show notifications in system tray** option is selected on the General tab of the R-Crypto Settings panel, **R-Crypto** will show the "All encrypted disks are successfully disconnected." message in the balloon ToolTip appearing at the **R-Crypto** icon in the system tray.

## IV Managing Encrypted Disks

You may perform all encrypted disk management operations on the disk's Properties panel.

**To access the encrypted disk Properties panel,**

- **Right-click the encrypted disk's file-container in Windows Explorer and select Disk Properties**

**Other ways to access the encrypted disk Properties panel:**

- Right-click the encrypted disk's file-container in the **Windows Explorer** and select **Disk Properties** on the shortcut menu  
or
- Right-click the encrypted disk's file-container in the **Windows Explorer**, select **Properties** on the shortcut menu, go to the R-Crypto tab, and click the **Advanced** button  
or
- Click the encrypted disk in **Recent Encrypted Disks** on the R-Crypto Management Panel and select **Properties** on the shortcut menu.

***If the encrypted disk is connected***

- Right-click the encrypted disk in the **Windows Explorer** and select **Disk Properties** on the shortcut menu  
or
- Right-click the encrypted disk in the **Windows Explorer**, select **Properties** on the shortcut menu, go to the R-Crypto tab, and click the **Advanced** button  
or
- Click the connected encrypted disk on R-Crypto Management Panel and select **Properties** on the shortcut menu.

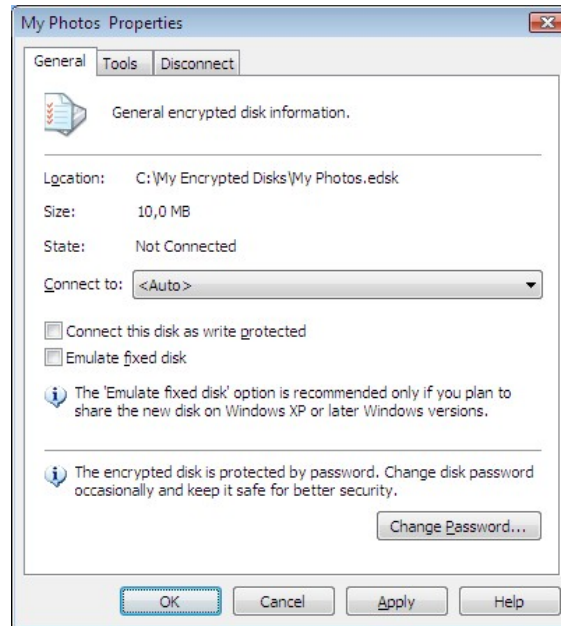
Then you may perform the following operations:

- **Change disk default drive letter and other connection options;**
- **Change disk disconnect options;**
- **Change disk password;**
- **Change disk size;**
- **Re-encrypt an encrypted disk.** Note, that you may also use Re-encrypt Wizard to select a new encryption and hash algorithms for your encrypted disk;
- **Wipe an encrypted disk;**
- **Remove an encrypted disk from Recent Encrypted Disks.**

### 4.1 Change Disk Connect Options

You may change the encrypted disk's default drive letter and other connect options on the General tab of the encrypted disk Properties panel.

General tab

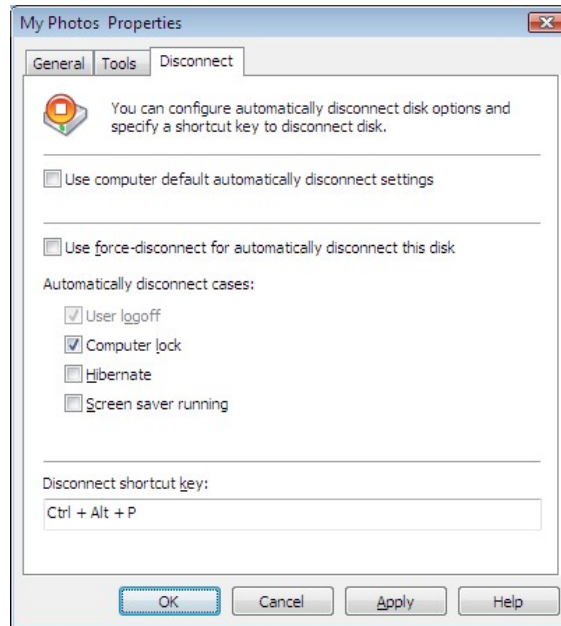
**Encrypted disk default connect options:**

- |                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|--------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Connect to                           | Select a default connection point for the encrypted disk which will be used when connecting your disk to the system. You may select a drive letter from the list of available drive letters or you may select an empty NTFS folder as a connection point for the encrypted disk by clicking <Browse...>. Select <Auto> to let <b>R-Crypto</b> automatically choose the drive letter every time you connect the encrypted disk to the system. |
| Connect this disk as write protected | Select this check box if you want to connect the encrypted disk as a read-only device. You will be able to read data from the disk but not to write anything to it.                                                                                                                                                                                                                                                                          |
| Emulate fixed disk                   | Select this checkbox if you want that your system sees the disk as a fixed one. Select <b>Emulate fixed disk</b> only if you plan to share the encrypted disk on Windows XP or later Windows versions.                                                                                                                                                                                                                                       |

## 4.2 Change Disk Disconnect Options

You may change encrypted disk disconnect options on the Disconnect tab of the encrypted disk Properties panel.

Disconnect tab

**Encrypted Disk disconnect options:**

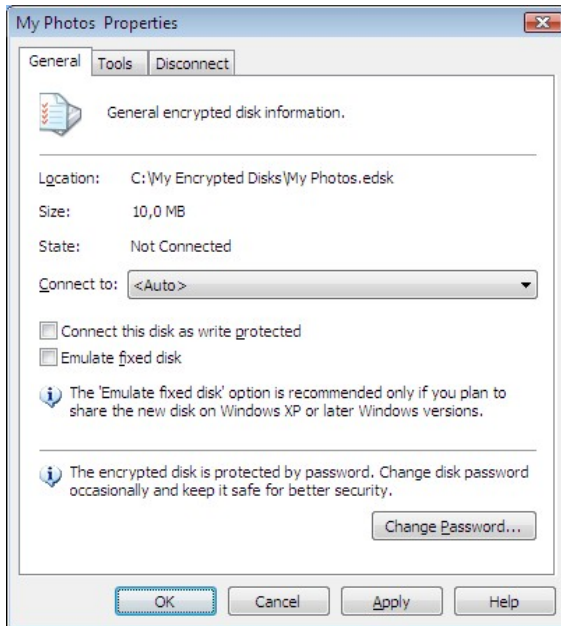
Use computer default automatically disconnect settings	Select this check box if you want <b>R-Crypto</b> to use default disconnect options.
Use force-disconnect for automatically disconnect the disk	Select this check box if you want <b>R-Crypto</b> to force-disconnect this encrypted disk. In this case, <b>R-Crypto</b> will not wait for other applications to finish their operations with the encrypted disk. Reduces disconnect time but risk appears to lose data being written to the encrypted disk when the disconnection occurs.
Automatically disconnect cases	Select the cases when <b>R-Crypto</b> will automatically disconnect the connected encrypted disk. <b>R-Crypto</b> will always disconnect disks upon user logoff.
Computer lock	Select this check box to make <b>R-Crypto</b> automatically disconnect the encrypted disk upon computer lock.
Hibernate	Select this check box to make <b>R-Crypto</b> automatically disconnect the encrypted disk upon your computer going hibernate.
Screen saver running	Select this check box to make <b>R-Crypto</b> automatically disconnect the encrypted disk when a screen saver starts.
Disconnect shortcut key	Select a shortcut key to disconnect the connected encrypted disk.

## 4.3 Change Disk Password

To change encrypted disk password,

- 1 Click the **Change Password** button on the **General** tab of the encrypted disk Properties panel.

General tab



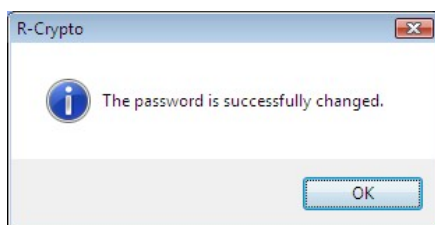
Or click the connected encrypted disk or the disk from Recent Encrypted Disks on R-Crypto Management Panel and select **Change Password** on the shortcut menu.

- 2 Enter the old and new passwords on the Encrypted Disk Password dialog box.

Encrypted Disk Password dialog box



- \* **R-Crypto** will change the encrypted disk password and the The password is successfully changed message will appear.

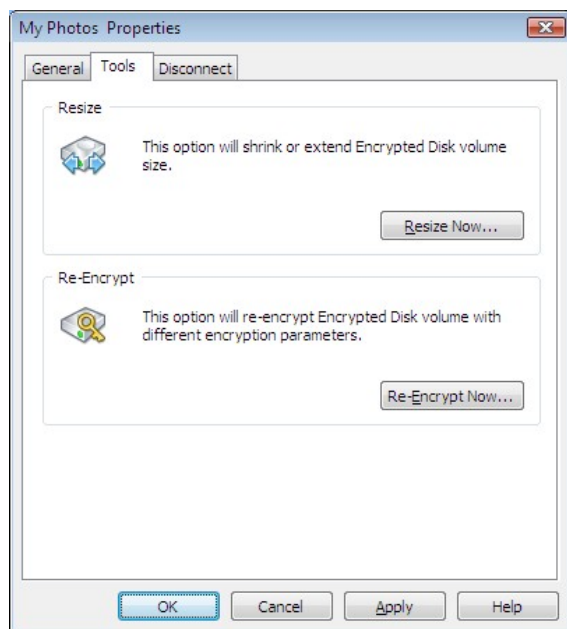


## 4.4 Change Disk Size

To change encrypted disk size,

- 1 Click the **Resize Now** button on the **Tools** tab of the **encrypted disk** Properties panel.

Tools tab

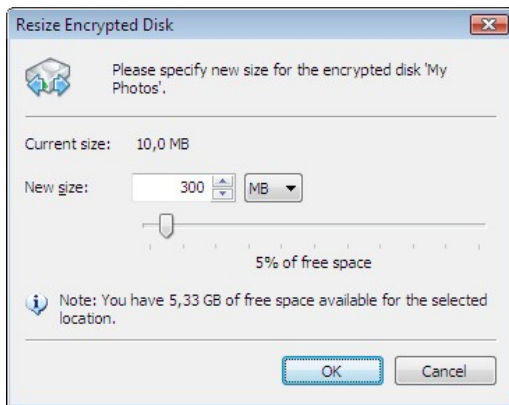


Or click the **connected encrypted disk** or the **disk from Recent Encrypted Disks** on **R-Crypto Management Panel** and **select Resize** on the **shortcut menu**.

The **Resize Encrypted Disk** dialog box will appear.

## 2 Enter the new disk size on the Resize Encrypted Disk dialog box

Resize Encrypted Disk dialog box



If the disk is not connected, the Encrypted Disk Password dialog box will appear. Enter the disk password and click the **OK** button.



- \* **R-Crypto will start changing the disk size showing its progress.**

The The Encrypted disk ... is successfully resized message box will appear when **R-Crypto** finishes creating the new encrypted disk.



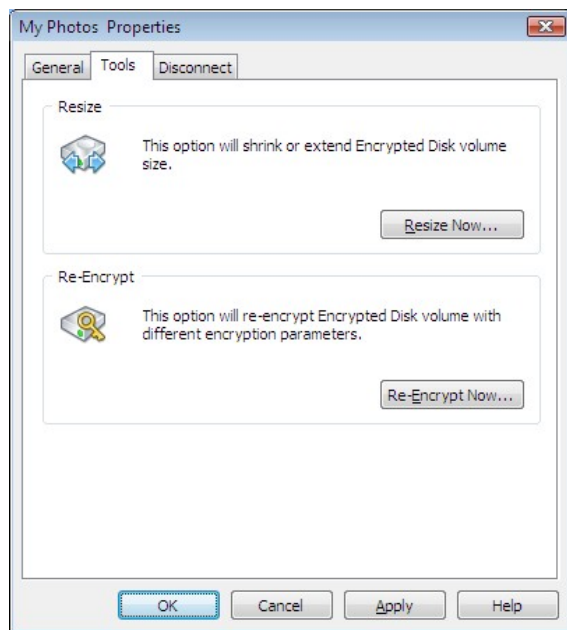
## 4.5 Re-encrypt an Encrypted Disk

**R-Crypto** provides a special Re-Encrypt Disk Wizard to perform an encrypted disk re-encryption operation. It is recommended to re-encrypt your disk from time to time to enhance the security of your data. You may also use this Wizard to change encryption and hash algorithms for your encrypted disk.

## To Re-encrypt an encrypted disk,

- 1 Click the **Re-Encrypt Now** button on the **Tools** tab of the encrypted disk Properties panel.

Tools tab



Or click the **connected encrypted disk** or the disk from **Recent Encrypted Disks** on **R-Crypto Management Panel** and select **Re-Encrypt** on the shortcut menu.

The Re-Encrypt Disk Wizard will appear.

Welcome to the Re-Encrypt Disk Wizard page



Click the **Next** button to continue.

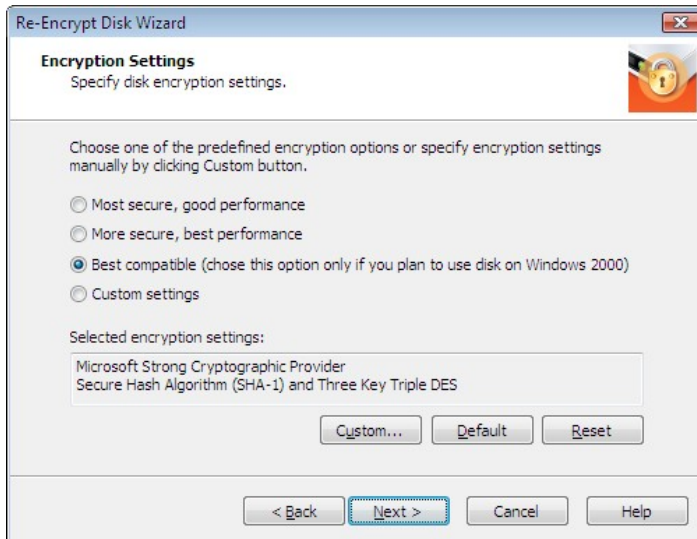
You may make **R-Crypto** not to show the first and the last pages in the wizards. Clear **Show Welcome and Completion pages next time**. To resume showing these pages, select **Show welcome and completion**



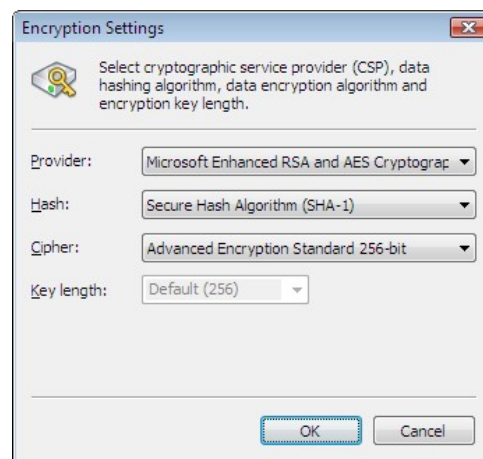
**pages in wizards** on the General tab of the R-Crypto Settings panel.

- 2 **Select new encryption settings for the disk on the Encryption Setting page and click the Next button.**

Encryption Settings page



You may select the settings either from a predefined set, or select them separately on the Encryption Settings dialog box. To reach the Encryption Settings dialog box select **Custom settings** or click the **Custom** button.

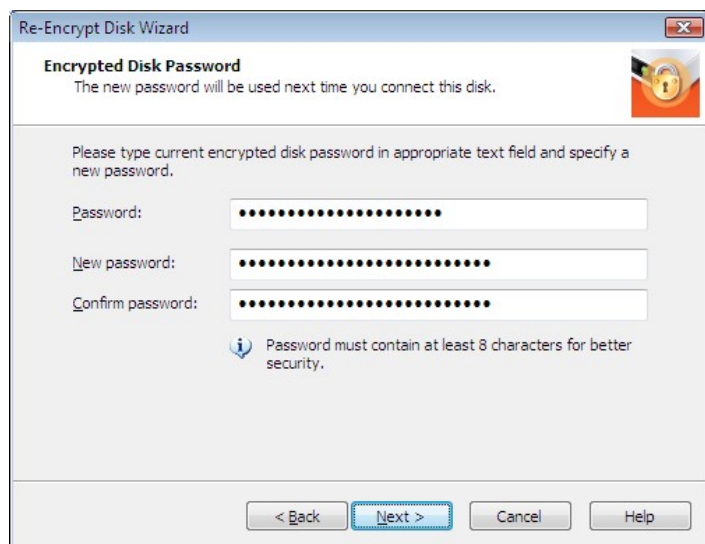


Click the **Default** button to make the settings as they specified on the the Encryption tab of the R-Crypto Settings panel. Click the **Reset** button to return the encryption settings to the previous ones.

The **Selected encryption settings** field briefly describes the settings you have selected. Please note that you need to select **Best compatible** if you plan to use the encrypted disk on Windows 2000. You may learn more about the encryption and hash algorithms on the **Cryptographic and Hash Algorithms** topic.

- 3 Enter a new password for the disk being re-encrypted on the Encrypted Disk Password page and click the Next button.

Encrypted Disk Password page



The screenshot shows the 'Re-Encrypt Disk Wizard' window, specifically the 'Encrypted Disk Password' step. The title bar reads 'Re-Encrypt Disk Wizard'. The main heading is 'Encrypted Disk Password' with a subtext: 'The new password will be used next time you connect this disk.' Below this, instructions state: 'Please type current encrypted disk password in appropriate text field and specify a new password.' There are three password input fields: 'Password:', 'New password:', and 'Confirm password:'. Each field contains a series of dots representing masked characters. A small information icon (i) is next to a note: 'Password must contain at least 8 characters for better security.' At the bottom, there are four buttons: '< Back', 'Next >', 'Cancel', and 'Help'. The 'Next >' button is highlighted with a blue border.

You need to enter a really new password, the old one will not be accepted. Go to the **Best Security Practices** topic for more information on how to choose a strong password.

- 4 On the Completing the Re-Encrypt Disk Wizard page click the Finish button to complete the re-encryption of the encrypted disk.

Completing the Re-Encrypt Disk Wizard page



The screenshot shows the 'Re-Encrypt Disk Wizard' window, specifically the 'Completing the Re-Encrypt Disk Wizard' step. The title bar reads 'Re-Encrypt Disk Wizard'. The main heading is 'Completing the Re-Encrypt Disk Wizard'. On the left, there is a graphic of a hard drive with a padlock icon. The text on the right says: 'Wizard has collected enough information to complete disk re-encryption process. If you want to review or change any settings, click Back. Click Cancel to close the wizard without performing any action. To complete the operation, click Finish.' Below this text is a checkbox labeled 'Show Welcome and Completion pages next time' which is checked. At the bottom, there are four buttons: '< Back', 'Finish', 'Cancel', and 'Help'. The 'Finish' button is highlighted with a blue border.

You may make **R-Crypto** not to show the first and the last pages in the wizards. Clear **Show Welcome and Completion pages next time**. To resume showing these pages, select **Show welcome and completion pages in wizards** on the General tab of the R-Crypto Settings panel.

- \* **R-Crypto** will start re-encrypting the encrypted disk showing its progress.

The The encrypted disk ... is sucessfully re-encrypted message box will appear when **R-Crypto** finishes re-encrypting the disk.



## 4.6 Wipe an Encrypted Disk

**Be aware:** Once an encrypted disk is wiped, all its data is completely destroyed, and you will not be able to recover it. The file-container will become unusable even if it is restored by any undelete software. You cannot undo this operation!

To wipe an encrypted disk and delete its file-container,

- Click the connected encrypted disk or the disk from Recent Encrypted Disks on R-Crypto Management Panel and select **Wipe** on the shortcut menu.

**Other ways to wipe an encrypted disk:**

- Right-click the connected encrypted disk in the **Windows Explorer** and select **Wipe Disk** on the shortcut menu
- or
- Right-click the encrypted disk file-container in the **Windows Explorer** and select **Wipe Disk** on the shortcut menu.

The **warning message** will appear. Click **Yes** on it.



- \* **R-Crypto** will disconnect the encrypted disk, render the disk file-container unusable pattern and delete the file-container from the host's file system.

## 4.7 Remove an Encrypted Disk from Recent Encrypted Disks

To see the Recent Encrypted Disks list, you need to enable **Store and show recent encrypted disks list** option on the General tab of the **R-Crypto Settings** panel.

**To remove a specific encrypted disk from the Recent Encrypted Disks list,**

- **Click the encrypted disk from Recent Encrypted Disks on R-Crypto Management Panel, and select Remove from Recent List on the shortcut menu.**
- \* **R-Crypto will remove the encrypted disk from the Recent Encrypted Disks list.**

**To remove all encrypted disks from the Recent Encrypted Disks list,**

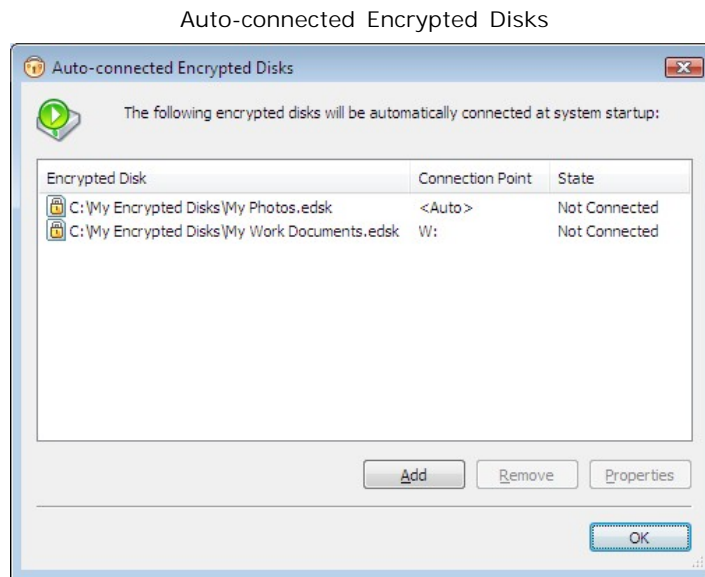
- **Click the Clear List shortcut on the Recent Encrypted Disks panel on R-Crypto Management Panel or right-click the R-Crypto icon in the system tray, select Recent Disks on the shortcut menu and then click Clear List.**
- \* **R-Crypto will remove all encrypted disks from the Recent Encrypted Disks list.**

## V Configure Auto-connected Encrypted Disks

**R-Crypto** allows the user to create a list of encrypted disks, that will be automatically connected at system startup. This automates and makes easier the process of connecting frequently used encrypted disks.

Note, that you must enable **R-Crypto** to run at system startup on the General tab of the R-Crypto Settings panel in order to automatically connect encrypted disks specified in the auto-connected encrypted disks list at system startup.

You may configure auto-connected encrypted disks list on the Auto-connected Encrypted Disks dialog box.



You may activate Auto-connected Encrypted Disks dialog box from R-Crypto Management Panel by clicking the **Configure auto-connected encrypted disks** task.

### To add an encrypted disk to the list,

- Click the **Add** button in the Auto-connected Encrypted Disks dialog box, select a desired disk's file-container in the appeared Open dialog box and click **Open**.

#### Other ways to add an encrypted disk to the auto-connected disks list:

- Right-click on the empty area of the list of encrypted disks in the Auto-connected Encrypted Disks dialog box and select **Add...** on the shortcut menu
- or
- Switch the dialog focus to the list of encrypted disks and press the **Insert** key.

- \* A newly added encrypted disk will appear in the list.

#### To remove an encrypted disk from the list,

- Select an encrypted disk you wish to remove from the auto-connected disks list and click the **Remove** button.

##### Other ways to remove an encrypted disk from the auto-connected disks list:

- Right-click on the desired encrypted disk in the list and select **Remove** on the shortcut menu  
or
- Select the desired encrypted disk in the list and press the **Delete** key.

- \* The desired encrypted disk will be removed from the list.

#### To change the properties of an encrypted disk in the list,

- Select an encrypted disk in the auto-connected disks list and click the **Properties** button.

##### Other ways to change the properties of the encrypted disk:

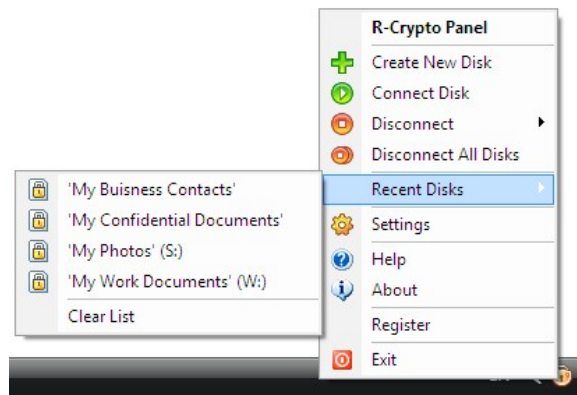
- Double click on the desired encrypted disk in the list  
or
- Right-click on the desired encrypted disk in the list and select **Properties** on the shortcut menu  
or
- Select the desired encrypted disk in the list and press the **Alt+Enter** keys.

- \* The desired encrypted disk's **Properties** panel will appear.

## VI R-Crypto System Tray Icon

**R-Crypto** places a special icon in the system tray to provide users with easy and quick access to common **R-Crypto** actions. You can activate a tray icon menu shown below by right-clicking the **R-Crypto System Tray Icon**.

R-Crypto system tray icon menu



### **R-Crypto system tray icon menu actions:**

R-Crypto Panel	Activates R-Crypto Management Panel. You also may perform this action by double-clicking on the <b>R-Crypto System Tray Icon</b> .
Create New Disk	Runs New Encrypted Disk Creation Wizard.
Connect Disk	Activates Connect Encrypted Disk dialog box.
Disconnect sub-menu	This sub-menu contains all currently connected encrypted disks. By clicking on one of them it will be disconnected. If no currently connected encrypted disks this sub-menu will be disabled. Dragging the cursor over the encrypted disk in this sub-menu shows the path to its file-container.
Disconnect All Disks	By clicking on this item <b>R-Crypto</b> will disconnect all currently connected encrypted disks and they will disappear in My Computer. If no currently connected encrypted disks this menu item will be disabled.
Recent Disks sub-menu	This sub-menu contains a clickable list of recently connected encrypted disks (if enabled). Click on the menu item representing a recent encrypted disk to display a Connect Encrypted Disk dialog box and connect a recent disk.
Settings	Activates R-Crypto Settings dialog box.
Help	Display <b>R-Crypto</b> help.
About	Display product information, version number, copyright and license status.
Register	Activates <b>R-Crypto</b> product registration dialog box.
Exit	By clicking on this item <b>R-Crypto</b> will disconnect all currently connected encrypted disks and exit.

## VII R-Crypto Settings

You may change default **R-Crypto** options on the R-Crypto Settings panel.

You may activate R-Crypto Settings panel:

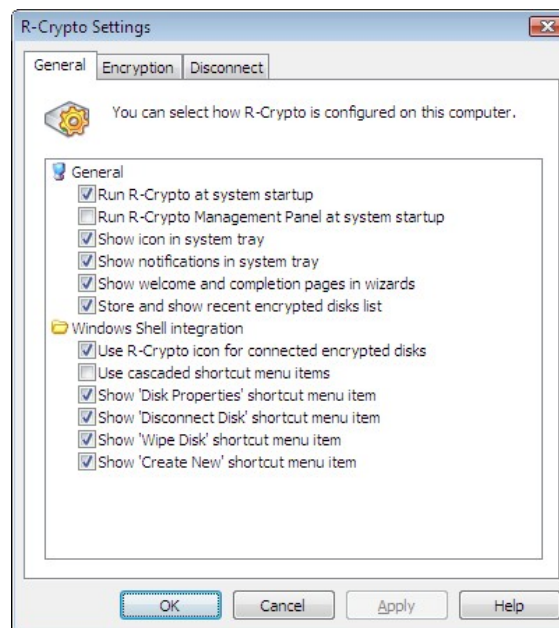
- By right-clicking the **R-Crypto** icon in the system tray and selecting **Settings** on the shortcut menu;
- From the R-Crypto Management Panel;
- From the **Control Panel** by clicking **R-Crypto** icon.


### 7.1 General Options

You may set general options on the General tab of the R-Crypto Settings panel.



General tab

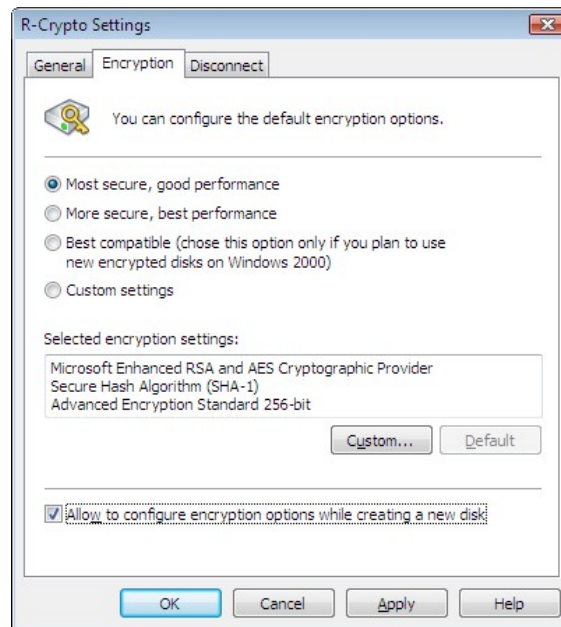
**General R-Crypto options:**

Run R-Crypto at system startup	Select this option to have <b>R-Crypto</b> running at each system startup. You will not have to start it manually.
Run R-Crypto Management Panel at system startup	Select this option to have <b>R-Crypto Management Panel</b> running at each system startup.
Show icon in system tray	Select this option if you want to see the <b>R-Crypto system tray icon</b> .
Show notifications in system tray	Select this option if you want to have the <b>R-Crypto</b> show the notifications of completed operations appeared in balloon ToolTips appearing at the <b>R-Crypto system tray icon</b> .
Show welcome and completion pages in wizards	Select this option if you want to see the welcome and completion pages in <b>R-Crypto</b> wizards.
Store and show recent encrypted disks list	Select this option if you want <b>R-Crypto</b> to store the list of recently connected encrypted disks. This list will appear in the <b>R-Crypto system tray icon</b> shortcut menu and in the R-Crypto Management Panel. This option allows you to find the necessary encrypted disks easier, but reveals it to anyone who has access to your computer.
Windows Shell integration:	
Use R-Crypto icon for connected encrypted disks	Select this option if you want to see connected encrypted disks marked with the <b>R-Crypto icon</b> rather than the icon of the standard disk icon in My Computer.
	
Use cascaded shortcut menu items	Select this option if you want to place all <b>R-Crypto</b> shortcut menu items in the <b>Windows Explorer</b> for the connected encrypted disk or the encrypted disk file-container into the <b>R-Crypto</b> submenu.
Show 'Disk Properties' shortcut menu item	Select this option if you want to have <b>Disk Properties</b> on the connected encrypted disk or encrypted disk file-container shortcut menu item in the <b>Windows Explorer</b> .
Show 'Disconnect Disk' shortcut menu item	Select this option if you want to have <b>Disconnect Disk</b> on the connected encrypted disk or encrypted disk file-container shortcut menu item in the <b>Windows Explorer</b> .
Show 'Wipe Disk' shortcut menu item	Select this option if you want to have <b>Wipe Disk</b> on the connected encrypted disk or encrypted disk file-container shortcut menu item in the <b>Windows Explorer</b> .
Show 'Create New' shortcut menu item	Select this option if you want to have <b>R-Crypto file-container</b> shortcut menu item in the <b>New</b> submenu in the <b>Windows Explorer File</b> menu.

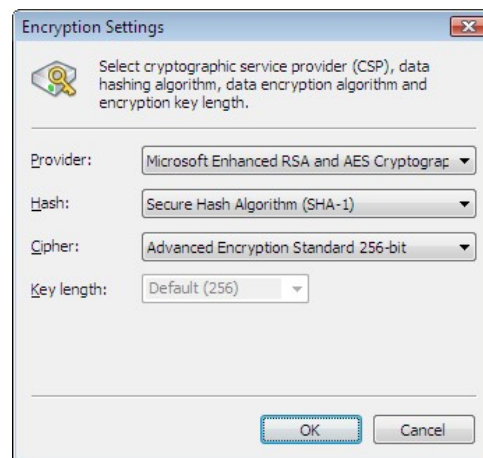
## 7.2 Encryption Options

You may set default encryption options on the Encryption tab of the R-Crypto Settings panel.

### Encryption tab



You may select the settings either from a predefined set, or select them separately on the Encryption Settings dialog box.



To reach the Encryption Settings dialog box select **Custom settings** or click the **Custom** button.

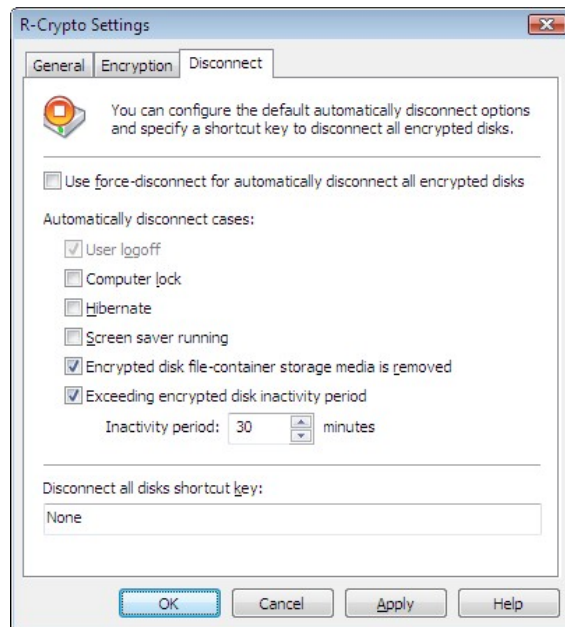
The **Selected encryption settings** field briefly describes the settings you have selected. Please note that you need to select **Best compatible** if you plan to use the new encrypted disk on Windows 2000. You may learn more about the encryption and hash algorithms on the **Cryptographic and Hash Settings** topic.

Select **Allow to configure encryption options while creating a new disk** to be able to set the encryption options for the new encrypted disk on the New Encrypted Disk Creation Wizard.

## 7.3 Disconnect Options

You may set default disconnect options on the Disconnect tab of the R-Crypto Settings panel. These options are used for all connected encrypted disks excluding those disks for which individual **disconnect options** are set.

## Disconnect tab

**Default disconnect options:**

Use force-disconnect for automatically disconnect all encrypted disks	Select this check box if you want <b>R-Crypto</b> to force-disconnect all connected encrypted disks. In this case, <b>R-Crypto</b> will not wait for other applications to finish their operations with the encrypted disks. Reduces disconnect time but risk appears to lose data being written to the encrypted disk when the disconnection occurs.
Automatically disconnect cases	Select the cases when <b>R-Crypto</b> will automatically disconnect all connected encrypted disk. <b>R-Crypto</b> will always disconnect disks upon user logoff.
Computer lock	Select this check box to make <b>R-Crypto</b> automatically disconnect all connected encrypted disks upon computer lock.
Hibernate	Select this check box to make <b>R-Crypto</b> automatically disconnect all connected encrypted disks upon your computer going to hibernate.
Screen saver running	Select this check box to make <b>R-Crypto</b> automatically disconnect all connected encrypted disks when a screen saver starts.
Encrypted disk file-container storage media is removed	Select this check box to make <b>R-Crypto</b> automatically disconnect all connected encrypted disks upon encrypted disk file-container storage media is removed from the system.
After period of encrypted disk inactivity	Select this check box to make <b>R-Crypto</b> automatically disconnect connected encrypted disk upon exceeding an encrypted disk inactivity period. Inactivity period is a period of time when the connected encrypted disk is not being used, that is it is a period of time when no data is being read from the disk or being written to the disk.
Disconnect shortcut key	Select a shortcut key to disconnect all connected encrypted disk.

## VIII Command-line Utility

R-Crypto provides a command-line utility for advanced managing of the encrypted disks' connections. This command-line utility is intended to be used in batch files.

### Connect an encrypted disk

To connect the desired file-container to the system run the following command:

```
EdiskCmd.exe connect [<connect options>] <file-container path>
```

#### Valid connect command options:

- Specifies the file-container password as PWD.  
password=PW  
D or -p=PWD
- readonly or -ro Use this option to connect the encrypted disk as write protected.
- connect-point=CP or -cp=CP Specifies the encrypted disk connection point as CP. CP can be a drive letter, e.g. "S:", or a path to an empty NTFS folder.
- fixed or -fd Use this option to connect the encrypted disk emulating a fixed disk.

#### Examples:

```
EdiskCmd.exe connect C:\MyEncryptedDisk.edsk  
EdiskCmd.exe connect --connect-point=R: --password=secret C:\MyEncryptedDisk.edsk
```

### Disconnect an encrypted disk

To disconnect the desired encrypted disk from the system run the following command:

```
EdiskCmd.exe disconnect [<disconnect options>] <file-container path or disk connection point>
```

#### Valid disconnect command options:

- force or -f Force encrypted disk disconnection even if there are any opened handles to the disk.

#### Examples:

```
EdiskCmd.exe disconnect S:  
EdiskCmd.exe disconnect C:\MyEncryptedDisk.edsk
```

### Disconnect all encrypted disks

To disconnect all connected encrypted disks from the system run the following command:

```
EdiskCmd.exe disconnectall [<disconnectall options>]
```

**Valid disconnectall command options:**

--force or -f      Force encrypted disk disconnection even if there are any opened handles to the disk.

**Examples:**

```
EdiskCmd.exe disconnectall --force
```

## IX Security Issues

### Best security practices

#### Cryptographic and Hash Algorithms

### 9.1 Best Security Practices

It is recommended to follow these simple rules to enhance the security of your data protected by R-Crypto:

#### Select a strong password

- Select a password, or even better, a pass phrase sufficiently long. 8 characters at least.
- Do not select simple words or numbers, like your date of birth. Include capitalized letters, digits, and other characters.

#### Maintain your encrypted disks

- Change password regularly.
- Re-encrypt your disks periodically.
- Use Wipe an Encrypted Disk function to delete the desired encrypted disk instead of simple deletion.

#### Other security practices

- Remember your passwords. Do not write them on paper.

### 9.2 Cryptographic and Hash Algorithms

**R-Crypto** uses separate Cryptographic Service Providers (CSP's) to perform all its data encryption, data hashing and encryption keys generation operations. Those cryptographic service providers may be either those already built into the Windows operating system (like Microsoft Strong Cryptographic Provider and Microsoft Enhanced RSA and AES Cryptographic Provider built into Windows XP), or obtained separately and installed by the user itself. That ensures that only known and reliable implementations of cryptography are used.

**R-Crypto** supports the following cryptographic providers and their respective algorithms that are pre-installed in the Windows operating system by default:

#### Windows 2000/XP/2003/Vista/Server 2008/Windows 7

**Cryptographic providers:** Microsoft Enhanced Cryptographic Provider and Microsoft Strong Cryptographic Provider

##### Hash algorithms:

- Secure Hash Algorithm (SHA-1)
- Message Digest (MD2, MD4, MD5)

##### Encryption algorithms:

- RSA Data Security's (RC2, RC4)
- Data Encryption Standard (DES)
- Two Key Triple DES
- Three Key Triple DES

#### Windows XP/2003/Vista/Server 2008/Windows 7 only

**Cryptographic provider:** Microsoft Enhanced RSA and AES Cryptographic Provider

**Hash algorithms:**

- Secure Hash Algorithm (SHA-1, SHA-256\*, SHA-384\*, SHA-512\*)

\* SHA-256, -384, -512 are available on Windows starting from Windows Vista only.

- Message Digest (MD2, MD4, MD5)

**Encryption algorithms:**

- RSA Data Security's (RC2, RC4)
- Data Encryption Standard (DES)
- Two Key Triple DES
- Three Key Triple DES
- Advanced Encryption Standard (AES) - 128, 192 and 256 bit key lengths



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